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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/626,534	07/25/2003	Yasuo Yoda	03500.017431.	1177

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EXAMINER
LEE, PETER

ART UNIT	PAPER NUMBER
2852	

DATE MAILED: 08/09/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/626,534	YODA ET AL.	
	Examiner	Art Unit	
	Peter Lee	2852	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on *06 June 2005*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,6-8 and 14-17* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,6-8 and 14-17* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *06 June 2005* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National.Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Objections

1. Claim 15 is objected to because of the following informalities:

Replace on p. 5 line 16 the word "appratus" with --apparatus--.

Appropriate correction is required.

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

1. Claims 1 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rimai et al. (US pn 5807651) in view of Watanabe et al. (US pg pub 2002/0164177).

Rimai teaches an electrostatographic apparatus (title) (ie. image forming apparatus) comprising: A photoconductive primary image member (Fig 1 part 1)(ie. image bearing member bearing an image); and an intermediate transfer drum (Fig. 1 part 2) (ie. intermediate transfer member) contacting with the photoconductive primary image member in a contact portion (Fig. 1; the contact nip seen in between parts 1 and 2); wherein the image on said photoconductive primary image member is transferred to the intermediate transfer drum at the said contact portion

(col. 5 lines 43-47) and then the image is further transferred to a receiving sheet at a transfer station (Fig. 1 part 25) (ie. toner image on said image bearing member is transferred to a transfer medium by said intermediate transfer member), a Young's modulus of said photoconductive primary image member is taught to be greater than 10 GPa (col. 4 line 23; this teaching sufficiently satisfies the limitation of the Young's modulus being in the range $2 \times 10^8 [N/m^2]$ to $9 \times 10^9 [N/m^2]$, where 1 Pa = 1 $[N/m^2]$).

As to claim 7, Rimai teaches the image bearing member being of photoconductive nature (col. 5 line 21-22), and the transfer medium being an intermediate transfer drum (col. 5 lines 53-57) (ie. intermediate transfer member).

Rimai does not teach the photoconductive primary image member being in contact with the intermediate transfer drum within a pressure range limitation of $4.0 \times 10^4 [N/m^2]$ and $7.3 \times 10^4 [N/m^2]$.

Watanabe teaches having a photosensitive body being in contact with the intermediate transfer member at an average contact pressure of 1 kg/cm^2 that converts to $9.8 \times 10^4 N/m^2$ (p. 3 paragraph [0065]), which is sufficiently within the claimed range in claim 1.

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify the contact pressure at the transfer nip of the invention taught by Rimai to have the contact pressure as taught in Watanabe. A person of ordinary skill in the art would have been motivated to use a contact pressure as taught by Watanabe to ensure good primary transfer between the photosensitive drum and the intermediate transfer member (page 3 paragraph [0065]).

2. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Rimai et al. (US 5807651) in view of Watanabe et al. (US 2002/0164177) as applied to claims 1 and 7 above, and further in view of Tarnawskyj et al. (US 6397034).

Rimai et al. In view of Watanabe et al. teach all of the claim limitations as to claims supra.

Rimai et al . in view of Watanabe et al. does not teach the photoconductive drum (ie. image bearing member) having a range of surface resistivities as taught by the applicant.

Tarnawskyj teaches a range of surface resistivities of an intermediate transfer belt being preferably between $10^6 - 10^{12}\,\Omega/sq.$ (col. 10 lines 60-62) (ie. $10^8\,\Omega$/sq. to $10^{15}\,\Omega$/sq.).

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify photoconductive drum taught in Hara to have the range of surface resistivity as the intermediate transfer member taught by Tarnawskyj. Although the intermediate transfer member taught to have the required range of resistivity as taught by Tarnawskyj is not a photoconductive image bearing member, it would have been obvious to one of ordinary skill in the art to apply a range of resistivity of an intermediate transfer belt to a photoconductive drum ,such as the one seen by Rimai. One of ordinary skill in the art would have been motivated to do so because such a range of surface resistivities ensures sufficient image transfers by preventing air breakdown (col. 2 lines 20-29).

3. Claims 1, 6, 7, 8, 14, 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hara et al. (US 20010026709) in view of Hosoya et al. (US 6246845), and further in view of Tarnawskyj et al. (US 6397034).

Hara teaches an image forming apparatus (abstract first sentence) comprising: a photoconductive drum (fig. 5 part 11) (ie. image bearing member bearing a toner image); An endless semiconductive belt used as an intermediate transfer belt (page 4 paragraph [0054]) (ie. intermediate transfer member) contacting with the photoconductive drum in a contact position ([0185]); wherein the image on said semiconductive belt is transferred to a paper (Fig. 5 part P) (ie. transfer material) in a secondary transfer section by a bias roll ([0186]-[0187]).

Hara also teaches a belt cleaning device (fig. 5 part 23) comprising a cleaning blade (part 31) (ie. cleaning member opposed to said movable intermediate transfer member) and a bias roll (part 26) (ie. charge elimination member opposed to said intermediate transfer member and position upstream of a contact portion and downstream of said cleaning member).

Hara does not teach a contact pressure between the image bearing member and the intermediate transfer member being between $4.0 \times 10^4 [N/m^2]$ and $7.3 \times 10^4 [N/m^2]$.

Hosoya teaches having a pressure roller (Fig. 2 part 25) (ie. transfer member) and a backup roller (Fig. 2 part 24) being in contact with a pressure of between 500 to 10000 g/cm^2. Because the backup roller 24 is located within the intermediate transfer medium (Fig. 2 part 23) (ie. image bearing member) that is responsible for transferring the image from the latent image carrier (Fig. 2 part 22), it is seen that in fact the intermediate transfer medium is in contact with the pressure roller. After converting the values taught by Hosoya into $[N/m^2]$ by using the conversion (multiply $[kg/cm^2]$ by 9.804x10e4 to get in units of $[N/m^2]$), it is observed that the values taught by Hosoya are within the range limitation given in the claim.

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to utilize such a range of resitivity values for the semiconductive belt when

used in such an image forming apparatus. Although the contact pressure taught by Hosoya is for a contact region between an intermediate transfer member and a pressure roller, it would be obvious to apply the same range of pressure contact between a photoconductive member and an intermediate transfer member as is taught by applicant. One of ordinary skill in the art would have been motivated to do this because the range taught ensures a high level of transfer efficiency close to 100% (col. 7 lines 33-40).

Hara in view of Hosoya does not teach the photoconductive drum (ie. image bearing member) having a range of surface resistivities as taught by the applicant.

Tarnawskyj teaches a range of surface resistivities of an intermediate transfer belt being preferably between $10^6 - 10^{12}\,\Omega/sq.$ (col. 10 lines 60-62) (ie. $10^8\,\Omega$/sq. to $10^{15}\,\Omega$/sq.).

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify photoconductive drum taught in Hara to have the range of surface resistivity as the intermediate transfer member taught by Tarnawskyj. Although the intermediate transfer member taught to have the required range of resistivity as taught by Tarnawskyj is not a photoconductive image bearing member, it would have been obvious to one of ordinary skill in the art to apply a range of resistivity of an intermediate transfer belt to a photoconductive drum as seen by Hara teaching both an image bearing member (ie. photoconductive drum) and an intermediate transfer member being photoconductive ([0039] and [0046]). One of ordinary skill in the art would have been motivated to do so because such a range of surface resistivities ensures sufficient image transfers by preventing air breakdown (col. 2 lines 20-29).

Hara in view of Hosoya does not teach the use of a single layer intermediate transfer belt (ie. image bearing member).

Tarnawskyj teaches the use of a single layer transfer belt for use in an electrostatographic reproducing apparatus (fig. 3; note: col. 5 lines 45-52).

It would have been obvious to one of ordinary skill in the art to modify the intermediate transfer medium taught by Hara to be a single layer intermediate transfer belt as taught by Tarnawskyj. One of ordinary skill in the art would have been motivated to use a single layer intermediate transfer belt made of a fluorinated carbon filled polyimide for its high tensile property which optimizes the film stretch registration and transfer conformance (col. 6 lines 1-6).

4. Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hara et al. (US pa 2001/0026709) in view of Hosoya et al. (US pn 6246845).

Hara teaches an image forming apparatus (abstract first sentence) comprising: An endless semiconductive belt used as an intermediate transfer belt (page 4 paragraph [0054]) (ie. image bearing member bearing an image); and a bias roll (Fig. 5 part 26) (ie. transfer member) contacting with the semiconductive belt (Fig. 5 part 24) in a contact portion (Fig. 5; the nip in between rollers 244 and 26); wherein the image on said semiconductive belt is transferred to a paper (Fig. 5 part P) (ie. transfer medium) in said contact portion by said bias roll, a Young's modulus of said semiconductive belt is taught to be greater than 500 MPa (page 3 paragraph [0037]; this teaching includes values that satisfy the limitation of the Young's modulus being in the range $2 \times 10^8 [N/m^2]$ to $9 \times 10^9 [N/m^2]$) (where 1 Pa = $1 [N/m^2]$).

Hara also teaches a first semiconductive roll that may be a transfer roll ([0143]) (ie. transfer member) having an Asker C hardness of between 25 to 70 degrees (ie. Asker –C hardness of said transfer member ranges between 35-49 degrees).

Hara does not specifically teach, pertaining to claim 1, a contact pressure between the image bearing member and the transfer member being between 4.0 x 10^4 [N/m^2] and 7.3 x 10^4 [N/m^2].

Hosoya teaches having a pressure roller (Fig. 2 part 25) (ie. transfer member) and a backup roller (Fig. 2 part 24) being in contact with a pressure of between 500 to 10000 g/cm^2. Because the backup roller 24 is located within the intermediate transfer medium (Fig. 2 part 23) (ie. image bearing member) that is responsible for transferring the image from the latent image carrier (Fig. 2 part 22), it is seen that in fact the intermediate transfer medium is in contact with the pressure roller. After converting the values taught by Kosoya into [N/m^2] by using the conversion (1 kg/cm^2 = 1 [N/m^2]), it is observed that the values taught by Hosoya are within the range limitation given in the claim.

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to utilize such a range of resitivity values for the semiconductive belt when used in such an image forming apparatus. One of ordinary skill in the art would have been motivated to do this because the range taught ensures a high level of transfer efficiency close to 100% (col. 7 lines 33-40).

5. Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hara in view of Hosoya as applied to claim 16 above, and further in view of Tarnawskyj (US 6397034).

Hara in view of Hosoya teach all of the limitations as laid out above.

Hara in view of Hosoya does not teach the use of a single layer intermediate transfer belt (ie. image bearing member).

Tarnawskyj teaches the use of a single layer transfer belt for use in an electrostatographic reproducing apparatus (fig. 3; note: col. 5 lines 45-52).

It would have been obvious to one of ordinary skill in the art to modify the intermediate transfer medium taught by Hara to be a single layer intermediate transfer belt as taught by Tarnawskyj. One of ordinary skill in the art would have been motivated to use a single layer intermediate transfer belt made of a fluorinated carbon filled polyimide for its high tensile property which optimizes the film stretch registration and transfer conformance (col. 6 lines 1-6).

Response to Arguments

6. Applicant's arguments filed June 6, 2005 have been fully considered but they are not persuasive.

On p. 9 first paragraph and p. 12 last paragraph of the applicants response pertaining to claims 1 and 8 respectively, it is argued that Hosoya et al. does not teach the proper range of contact pressures between an image bearing member and a transfer member. Hosoya et al. Teaches a range of contact pressures from 500 to 10000 g/cm^2. After converting the values taught by Hosoya into $[N/m^2]$ by using the conversion (multiply [kg/cm^2] by 9.804x10e4 to get in units of $[N/m^2]$), the converted range taught by Hosoya et al. becomes $4.902x10^4 - 9.804x10^5\ N/m^2$ which are well within the range limitation given in the claim.

On p. 11 applicant argues that the prior art reference of Watanabe et al. (US 2002/0164177), which does not share a common assignee, does not have an earlier filing date than the applicants priority date of JP 2002-221515 that is July 30, 2002. However, Examiner

would like to point out that the filing date of the Watanabe et al. reference is shown to be February 28, 2002, and in addition is a continuation of application 09/662829 which is now a patent (US 6389242) that was patented on May 14, 2002. Both the filing date of the pregrant publication of Watanabe et al. that has been used for the current office action (US 2002/0164177), and the parent applications patent date (US 6389242) have dates earlier than the priority date given for the applicant.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Peter Lee whose telephone number is 571-272-2846. The examiner can normally be reached on mon-fri 9:00 am-5:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Arthur Grimley can be reached on 571-272-2136. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

PL 8/1/2005

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